

## A NEW GENUS FOR TWO NEW SPECIES OF DUFOUREINE BEES FROM CALIFORNIA

(Hymenoptera: Apoidea)

P. H. TIMBERLAKE

*University of California Citrus Experiment Station, Riverside*

The discovery and recognition of a new genus of dufoureine bees in California is an unexpected event and noteworthy because the group may represent the more primitive ancestral stock from which *Dufourea* was derived, and because it is excessively rare. The first specimen of the new group was collected in 1914, and additional specimens, representing another species, were not collected until 1955.

### *Protodufourea* Timberlake, new genus

*Protodufourea* resembles *Dufourea* in general habitus, but is separated at once by the more primitive venation, the forewings having three submarginal cells. Besides the venation, it differs from *Dufourea* (*s. str.*) in having a differentiated pubescent area on ventral segments 2 to 4, the sixth ventrite emarginate at apex, and the eighth ventral plate slightly expanded at apex. It agrees with *Dufourea* in having the clypeus somewhat longer than the labrum, the antennae inserted only slightly below middle of face, the head and thorax closely and strongly punctured and the tergum of abdomen also closely punctured, but with a broad, smooth apical depression on each segment. From *Conanthalictus* it differs in the larger clypeus, with the antennae inserted higher on the face; in the more robust form, with the legs more incrassate; in the much shorter and smaller enclosure of propodeum, and in the comparatively coarse sculpture.

*Male*—Head rotund, as broad as long, the cheeks and temples not broadened. Labrum twice as broad as long and broadly rounded at apex. Clypeus rather large and about one and one-half times longer than labrum. Sub-antennal sutures obsolete. Proboscis short, the blade of the maxillae about twice as long as broad and shorter than the maxillary palpi; mentum and submentum wanting; maxillary palpi with six nearly equal joints; labial palpi about three-fourths as long as maxillary pair, the first joint nearly as long as the next three united, the fourth inserted on the side of the third joint and barely longer than either the second or third. Antennae inserted slightly below the middle of face, rather short and stout, the joints of flagellum as thick as long. Wings with three submarginal cells, the third nearly as long as

<sup>1</sup> Paper No. 861, University of California Citrus Experiment Station, Riverside, California.

the first and the second small; first recurrent nervure interstitial with the second intercubitus; basal nervure moderately curved. (Wings similar to those of *Dufourea*, except for the three submarginal cells.) Propodeum with a short dorsal surface and large posterior face, the basal area smooth, with a rugose band across the base. Legs moderately incrassate, the tarsi somewhat longer than the tibiae; hind basitarsi swollen, about three times longer than wide and two-thirds as thick as the hind tibiae, and subequal in length to the following tarsal joints combined; apical joint of tarsi and the claws stout, the latter bifid at apex. Abdomen ovate and about one and one-half times longer than wide when normally contracted, the apex without a well-defined pygidial area. Apical margin of the sixth ventral segment slightly reflexed and with a broad rounded emargination in the middle. Seventh and eighth ventral segments small, the eighth with a narrow median process, a little dilated at apex; seventh with a bilobed basal part supporting a two-lobed plate on each side. Sculpture much as in *Dufourea* (*s. str.*), with close stung punctures on the head, thorax, and abdomen; the tergites of abdomen, however, more or less broadly smooth and impunctate at apex. Pubescence moderately short and dense, about as in *Dufourea*, but hair of face below level of antennae no denser than elsewhere; hair of abdomen uniformly short and erect, without bands, becoming moderately longer and denser at apex; but that of venter forming thin bands across apex of segments 2 to 5 and becoming very short, dense, and velvety in a medioapical area on segments 2 to 4.

*Female*.—Similar to the male in most characters. Face without foveae. Clypeus with an apical, convexly arcuate groove, invested with long hairs and bounded above by an elevated sharp margin, the convexity of the groove and margin causing a small recess where they bend backward from the straight edge on each side. Flagellum of antennae more incrassate toward apex than in the male, but less clavate than in *Dufourea*. Scopal hair of hind tibiae and basitarsi rather long and dense, the hairs simple; tibial spurs slender and minutely serrate on inner side; tarsal claws with the inner tooth subbasal and half as long as the outer tooth. Pygidium normally concealed by the fifth tergite and apical fimbria. Sculpture as in male, except that of the clypeus is much coarser, and the punctures of abdomen are much finer and sparser.

Type of genus: *Protodufourea wasbaueri*.

#### ***Protodufourea parca* Timberlake, new species**

*Male*.—Black, the flagellum reddish ferruginous beneath, the tarsi dark ferruginous. Apical depression of tergites 2 to 6, tergite 7, and the apical margin of tergite 1 somewhat ferruginous. Tegulae dark-amber color. Wings somewhat dusky (reddish), the stigma and nervures ferruginous.

Head as long as wide and thin fronto-occipitally, with the cheeks hardly as wide as the eyes, and inner orbits slightly converging anteriorly. First two joints of labial palpi stout, the fourth very slender, inserted on the side of the third joint and a little longer than either the second or third. Lateral ocelli as far removed from eye margins as their distance apart, and the median ocellus not more than half its diameter in advance of the lateral pair. Head, thorax, and abdomen finely, closely, and nearly uniformly punctured,

the punctures mostly about two to three times their own diameter apart; punctures of clypeus coarser and forming a slight rugosity. Head and thorax mostly shining and more or less polished between the punctures; the propodeum slightly dullish from almost dense minute punctures, but the enclosure polished except for a rugose band across the base. Abdomen a little dullish, with the smooth, impunctate apical depression of the tergites comprising about one-fifth of the length of the segments. Pubescence whitish, becoming slightly ochraceous at apex of abdomen and pale fulvous on inner side of tarsi. Hair band on ventral segments 2 to 4 arcuate in middle to enclose a nearly semicircular apical patch of pale, velvety pubescence. Length, 7 mm.; anterior wing, 5.2 mm.

One male (holotype), CORONA, RIVERSIDE COUNTY, CALIFORNIA, March, 1914 (George R. Wilson), in collection of the Citrus Experiment Station.

#### *Protodufourea wasbaueri* Timberlake, new species

Similar to *P. parca* but pubescence brownish to black throughout, the velvety pubescent area on ventral segments 2 to 4 narrow and black, the wings grayish dusky, with dark nervures, and the eighth ventral plate more expanded at apex.

*Male*.—Black, the tegulae and claws slightly reddened, the tibial spurs testaceous. Wings grayish dusky, the nervures dark sepia or blackish, the stigma with a narrow, central reddish streak.

Structure and sculpture nearly as in *parca*, but rugose area of enclosure broader and covering most of dorsal surface of propodeum; posterior face of propodeum shining and with sparse minute punctures, but the flanks dullish and densely punctate on the inner half; abdomen more shining, the punctures a little stronger and sparser than in *parca*, with the apical depression comprising about one-fourth of the length on tergites 2 and 3. Maxillary and labial palpi not greatly different in length, the third to fifth joints of maxillary pair shorter than the other joints, and the labial palpi not incrassate at base. Pubescence brownish, intermixed with black on clypeus and becoming black on abdomen beyond the first tergite and more or less black on the legs; velvety pubescent area on apical middle of ventral segments 2 to 4 narrowly transverse and black, that on segment 2 narrowest and that on 4 shortest. Apical lobe of the paired plates of the seventh ventral segment much larger than the triangular proximal lobe, which is blackish (in *parca* both lobes pale ferruginous and subequal in size, with the proximal one subquadrate and rounded on outer margin and the distal one expanding toward the rounded apex.) Length, with abdomen contracted, 5.5 mm.; anterior wing, 4.5 mm.

*Female*.—Very similar to the male in size, color and sculpture, but differing in certain respects as detailed under the generic description. Clypeus, except across the base, with coarse, very shallow pits or punctures, which are separated by broad ridges. Hair on disk of tergites 1 to 3 shorter and sparser, and the apical fimbria denser than in the male. Hair of legs much

longer and denser than in the male and more blackish, although with a brownish cast in some light. Length, 7 mm.; anterior wing, 4.8 mm.

One male, 3 females (holotype male, allotype, and paratypes), GEM MINE, IDRIA, SAN BENITO COUNTY, CALIFORNIA, on *Emmenanthe penduliflora*, var. *rosea* Brand, June 29, 1955, and 1 male (paratype), 6 miles south of Idria, June 14, 1955 (Marius Wasbauer).

According to Mrs. H. Sharsmith, of the University of California Herbarium, who identified the flower visited by this bee, the var. *rosea* is a rare plant, apparently a serpentine endemic and appears more abundantly following a fire.

---

#### BOOK REVIEW

A MANUAL OF THE DRAGONFLIES OF NORTH AMERICA (ANISOPTERA) INCLUDING THE GREATER ANTILLES AND THE PROVINCES OF THE MEXICAN BORDER. By James G. Needham and Minter J. Westfall, Jr. xii + 615 pp., col. frontisp., 341 text figs., many tables. University of California Press, Berkeley. 1955. Price \$12.50.

The format is attractive, the contents well planned, the printing and binding nicely done. The illustrations are clear and show chiefly wing venation, the mature nymph, and the terminal appendages of the male; indeed much of the appeal of the volume is due to the many excellent photographs by the junior author. Part I (60 pp.) comprises Introduction, Field Studies, and Procedure, the last including a list of the genera and species treated, with pronunciations. Part II contains the Systematic Classifications, a two-page Glossary, and a list of Synonyms, which are separated from and not included in the general index.

One may quibble over such things as the use of "joint" rather than "segment" in describing parts of the leg, but they are small points in a fine book. Because it is readily usable by the amateur it should stimulate a wider general interest in Odonata. There is a fine chance for the hobbyist to make original observations, especially in life history studies. The authors have given a stimulus by citing, at the ends of keys, the names of genera and species for which nymphs are still unknown. A second volume, on the Zygoptera or damselflies, is in preparation.—HUGH B. LEECH, *Department of Entomology, California Academy of Sciences, San Francisco.*